

CLAIMS

1. A semiconductor substrate cutting method for cutting a semiconductor substrate having a front face formed with a functional device along a line along which the substrate should be cut, the method comprising the steps of:

irradiating the semiconductor substrate with laser light while positioning a light-converging point within the semiconductor substrate with a rear face of the semiconductor substrate acting as a laser light incident face, so as to form a modified region, and causing the modified region to form a starting point region for cutting along the line along which the substrate should be cut inside by a predetermined distance from the laser light incident face; and

attaching an expandable holding member to a rear face of the semiconductor substrate by way of a die bonding resin layer after forming the starting point region for cutting; and

cutting the semiconductor substrate and die bonding resin layer along the line along which the substrate should be cut by expanding the holding member after attaching the holding member.

2. A semiconductor substrate cutting method according to claim 1, further comprising the step of grinding the rear face of the semiconductor substrate such that the semiconductor substrate attains a predetermined thickness before forming the starting point region for cutting.

3. A semiconductor substrate cutting method according to claim 1 or 2, wherein the modified region includes a molten processed region.

4. A semiconductor substrate cutting method according to claim 1 or 2, wherein the modified region includes a molten processed region and a minute void positioned on the opposite side of the molten processed region from the laser light incident face.

5 5. A semiconductor substrate cutting method according to one of claims 1 to 4, wherein a fracture is allowed to reach the front face of the semiconductor substrate from the starting point region for cutting acting as a start point when forming the starting point region for cutting.

10 6. A semiconductor substrate cutting method according to one of claims 1 to 4, wherein a fracture is allowed to reach the rear face of the semiconductor substrate from the starting point region for cutting acting as a start point when forming the starting point region for cutting.

15 7. A semiconductor substrate cutting method according to one of claims 1 to 4, wherein a fracture is allowed to reach the front face and rear face of the semiconductor substrate from the starting point region for cutting acting as a start point when forming the starting point region for cutting.

20 8. A semiconductor substrate cutting method according to one of claims 1 to 7, further comprising the step of heating the die bonding resin layer before the step of cutting the semiconductor substrate and die bonding resin layer along the line along which the substrate should be cut by expanding the holding member.